

Kirschner

Herbert

. . . .

=Abstract=

Comparison between Kirschner's wire and Herbert's screw fixation in Scaphoid nonunion

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We reviewed the 30 cases of patients who underwent open reduction and internal fixation (O/R & I/F) with Kirschner's wire or Herbert screw with autogenous bone graft, compared and reported the results of treatment.

In 30 cases, O/R & I/F with Kirschner's wire combined with cancellous bone graft was done for 14 cases, and O/R & I/F with Herbert screw combined with bone graft for 16 case. We reviewed the duration of union, complication and the results of treatment by the Maudsley criteria.

Among 30 cases, all cases were male and average duration 34 months.

In union time, Kirschner's wire fixation group had 25.3 weeks. In distal Herbert screw insertion group with cancellous bone graft, union was achieved at 18.5 week, in block bone graft group, 21.1week. It took 22 weeks for proximal insertion group.

Among 14 cases with Kirschner's wire fixation 10 had an excellent or good result, while among 16 cases with Herbert's screw fixation 14 had such results according to Maudsley & Chen protocols.

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we concluded that Herbert screw fixation was the better method in treatment of scaphoid nonunion. This method had a shorter duration for union and better results compared with Kirschner's wire fixation. In addition, cancellous bone grafting had a shorter duration for bony union than block bone grafting.

Key words : Scaphoid fracture, Nonunion, Open reduction and internal fixation

29, 30, 19), 가 가, 3, 4, 12, 13, 18, 22), 가, 5, 21), Herbert, 16 K-, 14, Herbert, 가, 가, 가, (cancellous bone), 5, 10, 19), (bone block), 3, Herbert, Fisher¹⁰⁾가, 1994 1, 1998 12, 가, (snuff box), 30, Kirchner, Herbert, Maudsley, Chen, 가¹⁵⁾, 가 (Table 1).

Table 1. Method of assessment in treatment result(by Maudsley)

| Result | Clinical | | | Economic | Radiologic | |
|-----------|------------|------------|-------------------------|---------------------------|------------|------------|
| | Pain | Tenderness | Stiffness | | Union | Appearance |
| Excellent | - | - | - | normal work | + | normal |
| Good | mild | - | mild | slight limitation of work | + | fair |
| Fair | discomfort | + | restrict in full motion | some work avoided outline | - | good |
| Poor | + | + | limitation | change to lighter | - | poor |

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|----|------|---------|----------------|----------------------|----------|----------------|-----------|----------|--|---|--|--|--|--|
| | | 가 | | (scapholunate angle) | | - | | (intras- | | | | | | |
| 29 | 가 | Herbert | caphoid angle) | , | . | | | | | | | | | |
| 26 | , K- | 28.4 | 20 | K | 46.5 | | | | | | | | | |
| 가 | 가 | 18 | 32.5 | , Herbert | | | | | | | | | | |
| 가 | , | | 48.7 | 29.5 | - | K | | | | | | | | |
| 가 | 15 | 가 | | 64.4 | 47.5 | | | | | | | | | |
| 3 | , | 3 | | , Herbert | 69.5 | 48.2 | | | | | | | | |
| | | | | Herbert | | | | | | | | | | |
| | | , 1 | | | 9 | 가 | | | | | | | | |
| | | 가 9 | , 2 | 18.5 | 가 | , (bone block) | | | | | | | | |
| | | | | 5 | 가 | 21.1 | , Herbert | | | | | | | |
| | | | | | | 2 | | | | | | | | |
| | | | | 22 | . K- | | | | | | | | | |
| | | Herbert | 4 | , K- | 14 | 1 | 12 | | | | | | | |
| | | 1 | , | Herbert | | | | | | | | | | |
| 9 | 6 | , | | | 13 | 25.3 | | | | | | | | |
| 3 | 26 | 2 | 10 | | | | | | | | | | | |
| | | Herbert | 8 | 가 | 2 | | | | | | | | | |
| | | | | , K- | Herbert | , | | | | | | | | |
| | | 8 | 20 | 가 | Maudsley | Chen | | | | 가 | | | | |
| | | | | | | Herbert | | | | | | | | |

Table 2. Results in treatment according to fixation method

| Fixation method | | Herbert screw | Kirschner's wire |
|--------------------------|--------------------|---------------|------------------|
| Location | Proximal 1/3 | 4 | 1 |
| | Mid | 9 | 8 |
| | Distal 1/3 | 3 | 5 |
| Grafted bone | Cancellous | 11 | 14 |
| | Bone block | 5 | 0 |
| Approach | Dorsal | 2 | 0 |
| | Volar | 14 | 14 |
| Duration of union (week) | Cancellous | 18.5 | 27.3 |
| | Bone block | 21.1 | - |
| Immobilization (week) | | 6 - 8 | 8 - 20 |
| Complication | nonunion | 0 | 1 |
| | malunion | 1 | 0 |
| | pin-site infection | 0 | 4 |
| | Technical failure | 1 | 0 |

16 14
 , K-
 14 10
 , 1
 K 1
 4 K
 , Herbert
 - 72
 1 , 가
 가 1 (Table 2).

2 K
 , 27
 60 , 10
 가 (Fig. 1. A-C).

2. 2
 26 3
 가

Herbert
 . 8

1. 1
 41 1
 (Fig. 2. A-C).

3 ,



A



B



C

Fig. 1. A. Preoperative roentgenography showing scaphoid nonunion. B. Immediate postoperative X-ray showing fixation of scaphoid by 2 K-wires. C. Postoperative 27 weeks X-ray showing a bony union.

11) , 가 , 가 , K 가 , Titanium 가 , Cooney 가 5) Russe , 86%, Matti 91%, (dorsal peg graft)¹⁷⁾ 50% Herbert 8 , K 20 95% Herbert 2, 7) , Herbert , Herbert 14 , Herbert 9 18.5 , (bone block) 5 21.1 , 가 가 Herbert Herbert¹⁰⁾ , 2 , 22 97% K 가 가 , 가 , 10) K 1994 1 1998 12 K Herbert 14 16 1. K 14 13 92.9% , Herbert 16 가 2. 가 10) Herbert 3

3. 가 Maudsley 가 ,
 Herbert 16 9 , 5
 , 2 , K
 14 4 , 6 ,
 3 1
 , Herbert
 가
 K
 , Herbert K

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